

Title (en)

Exposure apparatus, liquid removing method, and device manufacturing method

Title (de)

Belichtungsvorrichtung, Verfahren zur Entfernung einer Flüssigkeit, und Verfahren zur Herstellung einer Vorrichtung

Title (fr)

Appareil d'exposition, procédé d'enlèvement de liquides, et procédé de fabrication d'un dispositif

Publication

EP 2816410 A1 20141224 (EN)

Application

EP 14175406 A 20040827

Priority

- JP 2003307771 A 20030829
- JP 2004150353 A 20040520
- EP 04772736 A 20040827

Abstract (en)

An exposure apparatus (EX) for exposing a substrate (P) with an image of a pattern via a projection optical system (PL), the exposure apparatus comprising: a substrate stage (PST) configured to support the substrate and to move the substrate under the projection optical system; and a liquid immersion system which has a supply path (14, 14A, 15) and a recovery path (21, 24) and is configured to supply liquid (1) to a space under the projection optical system via the supply path and to recover the liquid of a liquid immersion region formed in the space via the recovery path, wherein the liquid immersion system comprises a removal portion (17) for removing liquid remaining in the supply path by drawing or discharging the liquid from the supply path.

IPC 8 full level

G03F 7/20 (2006.01); **G03B 27/42** (2006.01); **H01L 21/027** (2006.01)

CPC (source: EP KR US)

G03F 7/2041 (2013.01 - KR US); **G03F 7/2055** (2013.01 - KR); **G03F 7/70258** (2013.01 - KR); **G03F 7/70275** (2013.01 - KR); **G03F 7/70341** (2013.01 - EP KR US); **G03F 7/70533** (2013.01 - US); **G03F 7/70866** (2013.01 - US); **G03F 7/70933** (2013.01 - US); **G03F 7/70991** (2013.01 - EP KR US); **H01L 21/0274** (2013.01 - KR)

Citation (applicant)

- WO 9949504 A1 19990930 - NIKON CORP [JP], et al
- JP H06124873 A 19940506 - CANON KK
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Citation (search report)

[AD] WO 9949504 A1 19990930 - NIKON CORP [JP], et al

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)

US 2005243293 A1 20051103; US 7847916 B2 20101207; EP 1659620 A1 20060524; EP 1659620 A4 20080130; EP 2816410 A1 20141224; EP 2816410 B1 20160817; EP 3163375 A1 20170503; EP 3163375 B1 20190109; HK 1205281 A1 20151211; JP 2010093302 A 20100422; JP 2010103560 A 20100506; JP 2010118680 A 20100527; JP 2011171757 A 20110901; JP 2012114481 A 20120614; JP 2014057102 A 20140327; JP 2015019112 A 20150129; JP 2016026333 A 20160212; JP 2017062481 A 20170330; JP 2018041112 A 20180315; JP 2019040217 A 20190314; JP 4492538 B2 20100630; JP 4985790 B2 20120725; JP 4985791 B2 20120725; JP 5083335 B2 20121128; JP 5152209 B2 20130227; JP 5573874 B2 20140820; JP 5585523 B2 20140910; JP 5821936 B2 20151124; JP 5924392 B2 20160525; JP 6115616 B2 20170419; JP 6332404 B2 20180530; JP WO2005022615 A1 20061026; KR 101321657 B1 20131023; KR 101345020 B1 20131226; KR 101477850 B1 20141230; KR 101609964 B1 20160414; KR 101874724 B1 20180704; KR 20060032949 A 20060418; KR 20110120938 A 20111104; KR 20120003013 A 20120109; KR 20140098816 A 20140808; KR 20160042180 A 20160418; KR 20180077311 A 20180706; SG 10201607457P A 20161028; SG 140603 A1 20080328; SG 140604 A1 20080328; SG 188876 A1 20130430; TW 200509216 A 20050301; TW 201207901 A 20120216; TW 201301348 A 20130101; TW 201447981 A 20141216; TW 201643940 A 20161216; TW 201737311 A 20171016; TW 201839806 A 20181101; TW I424464 B 20140121; TW I443711 B 20140701; TW I475596 B 20150301; TW I622083 B 20180421; TW I625762 B 20180601; TW I637425 B 20181001; US 10012909 B2 20180703; US 2007076183 A1 20070405; US 2009128793 A1 20090521; US 2011013161 A1 20110120; US 2013135596 A1 20130530; US 2015234282 A1 20150820; US 2018299789 A1 20181018; US 7826031 B2 20101102; US 8854599 B2 20141007; US 8867017 B2 20141021; US 9041901 B2 20150526; WO 2005022615 A1 20050310

DOCDB simple family (application)

US 17124305 A 20050701; EP 04772736 A 20040827; EP 14175406 A 20040827; EP 16183984 A 20040827; HK 15105698 A 20150616; JP 2004012787 W 20040827; JP 2005513548 A 20040827; JP 2010013498 A 20100125; JP 2010013499 A 20100125; JP 2010013500 A 20100125; JP 2010013501 A 20100125; JP 2011098569 A 20110426; JP 2012066146 A 20120322; JP 2013253866 A 20131209; JP 2014217253 A 20141024; JP 2015223657 A 20151116; JP 2016210356 A 20161027; JP 2017238608 A 20171213; JP 2018232712 A 20181212; KR 20057011493 A 20040827; KR 20117021162 A 20040827; KR 20117028493 A 20040827; KR 20147017361 A 20040827; KR 20167008491 A 20040827; KR 20187018319 A 20040827; SG 10201607457P A 20040827; SG 2008014854 A 20040827; SG 2008014870 A 20040827; SG 2013017488 A 20040827; TW 100124176 A 20040827; TW 101123703 A 20040827; TW 103115692 A 20040827; TW 105104419 A 20040827; TW 106121429 A 20040827; TW 107124132 A 20040827; TW 93125799 A 20040827; US 201313751469 A 20130128; US 201514703020 A 20150504; US 201816013519 A 20180620; US 31857408 A 20081231; US 60693506 A 20061201; US 92356810 A 20100928